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Tropical In-Ground Durability of Structural Sarawak Hardwoods Impregnated to High Retention with CCA-salts, CCA-oxide and FCAP after 20 Years Exposure

by

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Abstract

Statistical analysis (ANOVA) was conducted on durability (termite and decay combined) rating data collected over 20 years exposure period of over 140 species of Sarawak timbers with altogether 30,000 stake specimens, at the Forest Department's Sibu "graveyard" stake test sites from 1977. About 20 replicated stakes were pressure-treated to refusal with 10% g/ml concentration of up to 3 CCA-salt formulations and 1 CCA-oxide product and FCAP were visually evaluated every 6 months according to the 5-point ASTM D1758 durability rating scale, and the treated durability results reported in this paper are between 5 and 20 years exposure. The analysis was confined to 7 relatively high density hardwood species that are regarded suitable for in-ground structural use (ie, basic density >600 kg/m^3), and had achieved a minimum preservative retention of 16 kg/m^3 (as required for CCA-salts) but up to 48 kg/m^3 retention. The results revealed that the in-ground durability of treated wood decreased usually after 5 years to poor-to-moderately durable levels with CCA-salts, moderate-to-high durability with CCA-oxide, but failed with FCAP after 20 years. CCA-oxide treated hardwoods out-perform the CCA-salt treated counterparts despite their relatively similar retention and "over-treatment factor". The non-leach-resistant FCAP is clearly unsuitable as an industrial used in-ground wood protectant.

Keywords: In-ground durability test, Treated wood, Preservative performance, CCA-salt, CCA-oxide, FCAP, Tropical timbers

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